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(21)Application number : 09-095990 (71)Applicant : SONY CORP

(22)Date of filing : 14.04.1997 (72)Inventor : IIJIMA TOSHIYUKI

TOMITAKA TADAFUSA

KOYANAGI MASAKAZU

HOSONUMA NAOYASU

TAMAYAMA KEN

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(54) IMAGE PICKUP, STORAGE, PROCESSING, DISPLAY, REPRODUCTION  
TRANSMITTER AND RECORDING MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a panorama image without a sense of incongruity against a change in an image pickup condition.

SOLUTION: A video signal from an image pickup device 10 as an image pickup means is fed to a video capture board 31 of a computer 30. A magnification lens of a lens block section 11 is driven by a drive instruction from a camera controller 41. The image pickup device 10 is installed on a universal head 50, and driven in each direction by a drive instruction from a pan/tilt controller 43. A mode controller 42 controls the image pickup device 10 and the universal head 50 with respect to an absolute position drive request from the computer 30. The computer 30 is provided with a storage device 32, an image processing unit 33

and a controller 34, video signal processing and the control to generate a panorama image is conducted by the devices above and in the case of storing the video signal to the storage device 32, various image pickup conditions such as image pickup time, exposure and white balance are added and stored.

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## CLAIMS

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[Claim(s)]

[Claim 1] An image pick-up means to picturize a photographic subject and to generate a video signal, and the control means which controls actuation of the above-mentioned image pick-up means, It has a storage means to memorize the video signal by which the image pick-up was carried out [ above-mentioned ], and a processing means to form the video signal which connects the video signal memorized [ which were memorized and was above-picturized ] and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means. Image pick-up equipment characterized by memorizing the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with the above-mentioned image pick-up means for the above-mentioned storage means with the above-mentioned video signal.

[Claim 2] Image pick-up equipment according to claim 1 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 3] Image pick-up equipment according to claim 1 characterized by to amend the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 4] The image pick-up equipment according to claim 1 which carries out [ having a display means display the video signal by which formation was carried out / above-mentioned / on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, connecting the video signal

picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up means and forming the above-mentioned video signal, and ] as the description.

[Claim 5] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, It has a display means to display the video signal by which formation was carried out [ above-mentioned ], including 1 of the position coordinates, or two or more information. The video signal memorized [ which were memorized and was above-picturized ] is connected. Image pick-up equipment according to claim 1 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion directed on the above-mentioned display means when forming the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 6] An image pick-up means to picturize a photographic subject and to generate a video signal, and the control means which controls actuation of the above-mentioned image pick-up means, It has a storage means to memorize the video signal by which the image pick-up was carried out [ above-mentioned ], and a processing means to form the video signal which connects the video signal memorized [ which were memorized and was above-picturized ] and has a

field angle larger than the one image pick-up range of the above-mentioned image pick-up means. Storage characterized by memorizing the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with the above-mentioned image pick-up means with the above-mentioned video signal.

[Claim 7] Storage according to claim 6 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 8] Storage according to claim 6 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 9] The storage according to claim 6 which carries out [ having a display

means display the video signal by which formation was carried out / above-mentioned / on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, connecting the video signal picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up means and forming the above-mentioned video signal, and ] as the description.

[Claim 10] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, It has a display means to display the video signal by which formation was carried out [ above-mentioned ], including 1 of the position coordinates, or two or more information. The video signal memorized [ which were memorized and was above-picturized ] is connected. Storage according to claim 6 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion directed on the above-mentioned display means when forming the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 11] The processor carry out forming the video signal have an image pick-up means picturize a photographic subject and generate a video signal, the control means which control actuation of the above-mentioned image pick-up



means, and a storage means memorize the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with the above-mentioned image pick-up means with the video signal by which the image pick-up was carried out [ above-mentioned ], connect the video signal memorized [ which were memorized and was above-picturized ] and have a field angle large than the one image pick-up range of the above-mentioned image pick-up means as the description.

[Claim 12] The processor according to claim 11 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 13] The processor according to claim 11 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and

has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 14] The processor according to claim 11 which carries out [ having a display means display the video signal by which formation was carried out / above-mentioned / on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, connecting the video signal picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up means, and forming the above-mentioned video signal, and ] as the description.

[Claim 15] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, It has a display means to display the video signal by which formation was carried out [ above-mentioned ], including 1 of the position coordinates, or two or more information. The video signal memorized [ which were memorized and was above-picturized ] is connected. The processor according to claim 11 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion directed on the above-mentioned display means when forming the video signal which has a field angle larger than the one image pick-up range of the above-mentioned

image pick-up means.

[Claim 16] An image pick-up means to picturize a photographic subject and to generate a video signal, and the control means which controls actuation of the above-mentioned image pick-up means, A storage means to memorize the video signal by which the image pick-up was carried out [ above-mentioned ], and a processing means to form the video signal which connects the video signal memorized [ which were memorized and was above-picturized ] and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, While memorizing the image pick-up time of day and/or the image pick-up conditions at the time of having a display means to display the video signal by which formation was carried out [ above-mentioned ], and picturizing with the above-mentioned image pick-up means for the above-mentioned storage means with the above-mentioned video signal The display characterized by connecting the video signal picturized with the above-mentioned image pick-up means with the subregion of the above-mentioned video signal directed on the above-mentioned display means, and forming the above-mentioned video signal in it.

[Claim 17] The display according to claim 16 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions

with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 18] The display according to claim 16 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 19] The display according to claim 16 characterized by connecting with the above-mentioned image pick-up conditions the video signal picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up means including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and forming the above-mentioned video signal.

[Claim 20] The display according to claim 16 which carries out [ amending the

above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion by which directions were carried out / above-mentioned / when forming the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized / which were memorized and was above- picturized / including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, and ] as the description.

[Claim 21] The regenerative apparatus carry out forming the video signal which connects in the video signal reproduced by playback means reproduce the record medium with which the image pick-up time of day and/or the image pick-up conditions that the image pick-up with the above-mentioned image pick-up means was performed were recorded, and the above-mentioned playback means, and it has in a field angle large than the one image pick-up range of the above-mentioned image pick-up means with the video signal with which actuation of an image pick-up means was controlled and picturized as the description.

[Claim 22] The regenerative apparatus according to claim 21 characterized by forming the video signal which connects the near above-mentioned video signal

of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 23] The regenerative apparatus according to claim 21 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 24] The regenerative apparatus according to claim 21 which carries out [ having a display means display the video signal by which formation was carried out / above-mentioned / on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, connecting the video signal picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up

means, and forming the above-mentioned video signal, and ] as the description.

[Claim 25] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, It has a display means to display the video signal by which formation was carried out [ above-mentioned ], including 1 of the position coordinates, or two or more information. The video signal memorized [ which were memorized and was above-picturized ] is connected. The regenerative apparatus according to claim 21 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion by which directions were carried out [ above-mentioned ] when forming the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 26] An image pick-up means to picturize a photographic subject and to generate a video signal, and the control means which controls actuation of the above-mentioned image pick-up means, A storage means to memorize the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with the above-mentioned image pick-up means with the video signal by which the image pick-up was carried out [ above-mentioned ], Transmission equipment characterized by consisting of a processing means to form the video signal which connects the video signal memorized [ which were memorized and

was above-picturized ] and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, and a transmission means to transmit the video signal formed with the above-mentioned processing means.

[Claim 27] Transmission equipment according to claim 26 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 28] Transmission equipment according to claim 26 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 29] The transmission equipment according to claim 26 which carries out [ having a display means display the video signal by which formation was carried



out / above-mentioned / on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, connecting the video signal picturized by the subregion of the above-mentioned video signal directed on the above-mentioned display means with the above-mentioned image pick-up means and forming the above-mentioned video signal, and ] as the description.

[Claim 30] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, It has a display means to display the video signal by which formation was carried out [ above-mentioned ], including 1 of the position coordinates, or two or more information. The video signal memorized [ which were memorized and was above-picturized ] is connected. Transmission equipment according to claim 26 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion directed on the above-mentioned display means when forming the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 31] An image pick-up means to picturize a photographic subject and to generate a video signal, and the control means which controls actuation of the above-mentioned image pick-up means, A processing means to form the video

signal which connects the video signal memorized [ which were memorized and was above-picturized ] and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, and an image pick-up means to generate a video signal are used. The record medium characterized by coming to record the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with the above-mentioned image pick-up means with the video signal picturized with the above-mentioned image pick-up means.

[Claim 32] The record medium according to claim 31 characterized by forming the video signal which connects the near above-mentioned video signal of the above-mentioned image pick-up time of day and/or image pick-up conditions with the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means.

[Claim 33] The record medium according to claim 31 characterized by amending the above-mentioned video signal according to the above-mentioned image pick-up conditions in case the video signal which connects with the above-mentioned image pick-up conditions the video signal memorized [ which were memorized and was above-picturized ] including 1 of exposure, a white

balance, a focus, a scale factor, size, and the position coordinates or two or more information, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means is formed.

[Claim 34] The record medium according to claim 31 characterized by connecting the video signal picturized with the above-mentioned image pick-up means with the subregion of the above-mentioned video signal directed on a display means to display the video signal by which formation was carried out [ above-mentioned ] on the above-mentioned image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and forming the above-mentioned video signal in it.

[Claim 35] On the above-mentioned image pick-up conditions, exposure, a white balance, a focus, a scale factor, size, 1 of the position coordinates or two or more information are included. The video signal memorized [ which were memorized and was above-picturized ] is connected. A field angle larger than the one image pick-up range of the above-mentioned image pick-up means The record medium according to claim 31 characterized by amending the above-mentioned video signal of other subregions according to the image pick-up conditions of the above-mentioned video signal of the subregion directed on a display means to display the video signal by which formation was carried

out [ above-mentioned ] when forming the video signal which it has.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] In case this invention performs view \*\* from a remote place using a computer network, it is used, and it relates to a suitable image pick-up, storage, processing, a display, playback, transmission equipment, and a record medium.

[0002]

[Description of the Prior Art] It considers performing view \*\* for the image from a remote place for the object, such as observation of an event, and a monitor, advice, using a computer network (Internet). When performing view \*\* from such a remote place, the so-called panorama image which extended the horizontal field angle is suitable for view \*\*.

[0003] Then, generally, although the approach using the lens of a wide angle system as an approach of obtaining such a panorama image is learned, for example, since the lens of a wide angle system can also extend a vertical field

angle, it has a possibility that the number of scanning lines of the range of a panorama image may decrease, and resolution may fall, with the lens of the expensive and usual wide angle system.

[0004] On the other hand, a panorama image is picturized beforehand, and is saved at storage, such as a hard disk, and the approach of inserting in the newly picturized image into it, compounding it, and forming a panorama image is enforced. however, a false panorama image is formed by this approach -- \*\*\*\* -- there were problems, such as producing sense of incongruity between the new images and preservation images by which did not pass and insertion composition was carried out to change of image pick-up time of day, image pick-up conditions, etc.

[0005]

[Problem(s) to be Solved by the Invention] This application was accomplished in view of such a point, even if the lens of an expensive wide angle system was used for the trouble which it is going to solve with conventional equipment, it had a possibility that resolution might fall, and by the approach of inserting in a preservation image, compounding and forming a panorama image, there were problems, such as producing sense of incongruity, for example to change of image pick-up time of day or image pick-up conditions.

[0006]

[Means for Solving the Problem] For this reason, in this invention, while forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle, as the image pick-up time of day and/or the image pick-up conditions in that case are memorized, according to this, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained with high resolution.

[0007] Furthermore, as the video signal of other subregions was amended according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the video signal formed in this invention, also when some panorama images are changed according to this, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0008]

[Embodiment of the Invention] Namely, an image pick-up means for this invention to picturize a photographic subject and to generate a video signal, The control means which controls actuation of an image pick-up means, and a storage means to memorize the picturized video signal, It has a processing means to form the video signal which connects the video signal picturized and

memorized and has a field angle larger than the one image pick-up range of an image pick-up means, and the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with an image pick-up means are memorized for a storage means with a video signal.

[0009] Moreover, this invention has an image pick-up means picturize a photographic subject and generate a video signal, the control means which control actuation of an image pick-up means, a storage means memorize the picturized video signal, and a processing means form the video signal which connects the video signal picturized and memorized and has a field angle large than the one image pick-up range of an image pick-up means, and memorizes the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with an image pick-up means with a video signal.

[0010] Moreover, this invention forms the video signal which has an image pick-up means picturize a photographic subject and generate a video signal, the control means which controls actuation of an image pick-up means, and a storage means memorize the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with an image pick-up means with the picturized video signal, and connects the video signal picturized and memorized and it has in a field angle larger than the one image pick-up range of an image pick-up means.

[0011] Moreover, an image pick-up means for this invention to picturize a photographic subject and to generate a video signal and the control means which controls actuation of an image pick-up means, A storage means to memorize the picturized video signal, and a processing means to form the video signal which connects the video signal picturized and memorized and has a field angle larger than the one image pick-up range of an image pick-up means, While memorizing the image pick-up time of day and/or the image pick-up conditions at the time of having a display means to display the formed video signal, and picturizing with an image pick-up means for a storage means with a video signal The video signal picturized with the image pick-up means is connected with the subregion of the video signal directed on the display means, and a video signal is formed in it.

[0012] Moreover, this invention forms the video signal which connects the video signal reproduced by playback means to reproduce the record medium with which the image pick-up time of day and/or the image pick-up conditions that the image pick-up with an image pick-up means was performed were recorded, and the playback means, and has a field angle larger than the one image pick-up range of an image pick-up means with the video signal with which actuation of an image pick-up means was controlled and picturized.

[0013] Moreover, an image pick-up means for this invention to picturize a



photographic subject and to generate a video signal and the control means which controls actuation of an image pick-up means, A storage means to memorize the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with an image pick-up means with the picturized video signal, It consists of a processing means to form the video signal which connects the video signal picturized and memorized and has a field angle larger than the one image pick-up range of an image pick-up means, and a transmission means to transmit the video signal formed with the processing means.

[0014] Moreover, an image pick-up means for this invention to picturize a photographic subject and to generate a video signal and the control means which controls actuation of an image pick-up means, A processing means to form the video signal which connects the video signal picturized and memorized and has a field angle larger than the one image pick-up range of an image pick-up means, and an image pick-up means to generate a video signal are used. It comes to record the image pick-up time of day and/or the image pick-up conditions at the time of picturizing with an image pick-up means with the video signal picturized with the image pick-up means.

[0015] Furthermore, this invention forms in image pick-up conditions the video signal which connects the near video signal of image pick-up time of day and/or image pick-up conditions, and has a field angle larger than the one image

pick-up range of an image pick-up means including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information.

[0016] Furthermore, in case this invention forms the video signal which connects with image pick-up conditions the video signal picturized and memorized including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and has a field angle larger than the one image pick-up range of an image pick-up means, it amends a video signal according to image pick-up conditions.

[0017] Furthermore, this invention connects the video signal picturized with the image pick-up means with the subregion of the video signal directed on a display means to display the formed video signal on image pick-up conditions including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and forms a video signal in it.

[0018] Furthermore, this invention amends the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means display the video signal formed when forming the video signal which connects with image pick-up conditions the video signal picturized and memorized including 1 of exposure, a white balance, a focus, a scale factor, size, and the position coordinates, or two or more information, and

has a field angle larger than the one image pick-up range of an image pick-up means.

[0019]

[Example] Hereafter, it is the block diagram showing the configuration of an example of the equipment with which drawing 1 applied this invention explaining this invention with reference to a drawing.

[0020] In this drawing 1, the image pick-up equipment 10 as an image pick-up means shows a video camera as a whole, and image formation of the image pick-up light which reaches from a photographic subject (not shown) is carried out to a solid state image pickup device 12, for example, CCD, through the lens of the lens block section 11, drawing, etc. And by this CCD12, after the visual field image of arbitration is changed into a video signal, signal separation (sample hold: SH) / automatic-gain-control (AGC) equipment 13 is given.

[0021] With signal separation / automatic-gain-control equipment 13, while sample hold of the image output signal from CCD12 is carried out according to a predetermined pixel clock, automatic gain control is performed so that it may have predetermined gain, for example with the control signal of an auto iris (AE). The image output signal acquired in this way is supplied to a signal processor 15 through A/D-conversion equipment 14.

[0022] In a signal processor 15, the inputted signal is changed into each signals,

such as brightness, the color difference, and a video signal, and is supplied to a television monitor 20 and the video capture board 31 of the computer apparatus 30 mentioned later, such as a personal computer, as a video signal. The video signal supplied to this video capture board 31 by this is incorporated by the computer apparatus 30 one by one.

[0023] Moreover, the lens block section 11 of image pick-up equipment 10 is the zoom lens which can change the field angle picturized by driving the lens for variable power. And with the actuation instruction from the camera controller 41 mentioned later, a motor 16, for example, the stepping motor for zoom, rotates, and it is constituted so that the lens for above-mentioned variable power may drive.

[0024] While the camera controller 41 always performs lens control (a focus, zoom) of image pick-up equipment 10, exposure control (extracting gain, electronic shutter speed), white balance control, image quality control, etc., an interface with the mode controller 42 is performed. And while the control signal which drives the lens for variable power in a demand location is outputted to the actuation circuit (not shown) of a motor 16, for example to an actuation demand of a zoom, the positional information of the lens for variable power always communicates for the mode controller 42.

[0025] Furthermore, image pick-up equipment 10 is installed as a driving means

on equipment 50 with the degree of freedom of biaxial hands of cut, such as a pan (right and left) and a tilt (upper and lower sides), for example, a revolution universal head. And with the actuation instruction from the punch Ruta controller 43 mentioned later, a motor 51, for example, the stepping motor for pans, and the stepping motor 52 for tilts rotate, and it is constituted so that the revolution universal head 50 may drive in each direction.

[0026] An interface with the mode controller 42 is performed by the punch Ruta controller 43. And while the control signal driven in the direction of which the revolution universal head 50 was required is outputted to the actuation circuit (not shown) of motors 51 and 52, for example to an actuation demand of each direction of a pan and a tilt, the positional information of each direction of the revolution universal head 50, for example, a pan, and a tilt always communicates for the mode controller 42.

[0027] Furthermore, the mode controller 42 controls the whole system according to the internal state of image pick-up equipment 10 and the revolution universal head 50, and the interface information from the equipment outside. And this mode controller 42 is connected to a computer apparatus 30 by RS232C, and control is performed [ as opposed to / from a computer apparatus 30 / a location actuation demand ] absolutely.

[0028] That is, by the mode controller 42, the actuation instruction which drives

the motor 16 of the lens block section 11 and the motors 51 and 52 of the revolution universal head 50 in order to picturize [ as opposed to / from a computer apparatus 30 / a location actuation demand ] the location with image pick-up equipment 10 absolutely can distribute to the camera controller 41 and the punch Ruta controller 43.

[0029] With it, various kinds of photography conditions, such as positional information from these controllers 41 and 43, lens control information, exposure control information, white balance control information, and image quality control information, are transmitted to a computer apparatus 30 through the mode controller 42.

[0030] Furthermore, storage 32, an image processing system 33, and a control unit 34 are formed in this computer apparatus 30, and this computer apparatus 30 is used for it by these equipments as the video-signal processing means for formation of for example, a panorama image, and a control means. The video signal formed with this computer apparatus 30 is supplied to a computer screen 60, it considers as a user interface, and the conditions of internal processing etc. are determined using the image by which graphical display is carried out on this tubular surface.

[0031] In the further above-mentioned video capture board 31, while displaying the incorporated video signal on a monitor 60 by the quality of arbitration, it can

capture by the quality of arbitration with a capture signal to the graphics formats (for example, the still picture of a bit map format and a JPEG format, an animation, etc.) of arbitration, and can memorize to the storage 32, such as a hard disk.

[0032] And various kinds of above-mentioned photography conditions offered from the mode controller 42 are remembered to be the image pick-up time of day by which the above-mentioned video signal was captured on this occasion by storage 32 with the captured video signal.

[0033] The control algorithm furthermore performed with this computer apparatus 30 is explained using drawing 2 .

[0034] If a program starts in drawing 2 , processing which sets up each viewing area of an image pick-up image and a panorama image on a monitor 60 at a step [1] first will be performed. On a monitor 60, as shown for example, in drawing 1 , the viewing area 61 of an image pick-up image and the viewing area 62 of a panorama image are set up by this. And the video signal inputted into the viewing area 61 of these from image pick-up equipment 10 is displayed.

[0035] Furthermore it is a step [2], for example, the timer for communicating with the mode controller 42 periodically is set up. And if these initial setting is completed, it will change to the standby condition of an event that various kinds are generated, at a step [3]. In addition, the events generated are the timer event

(it mentions later for details) set up at the above-mentioned step [2], and a creation request event of the below-mentioned panorama image.

[0036] The detail of a timer event is explained here using drawing 4 . In addition, this timer event is an event generated in order to communicate with the mode controller 42 periodically.

[0037] Then, if this event is generated, it is judged whether setting out of a communication link port is completed at the step [11], and since setting out of a communication link port has not completed only the first time, establishment processing of a communication link port will be performed at a step [12]. In addition, with above-mentioned equipment, establishment of the RS-232C port for example, on a computer apparatus 30 is performed as a communication link port.

[0038] In the timer event of the 2nd [ further ] henceforth, the existence of received data is judged at a step [13], and when there are received data, analysis processing of received data is performed at a step [14]. That is, at this step [14], the positional information of the lens for variable power of the lens block section 11, the pan of the revolution universal head 50, and the positional information of each direction of a tilt are acquired by the communication link with the mode controller 42, for example. And the scale-factor information on a zoom, a pan, and the include-angle information on a tilt are taken out from such



information, respectively.

[0039] Next, the existence of a data transfer demand (Flag so) is checked at a step [15]. and there is a transfer request (True) -- it is -- since data are already stored in the transmission buffer at the time, while transfer processing is promptly performed using the data of this transmission buffer at a step [16] -- a transfer request -- being nothing (Flag so=False) -- it is carried out.

[0040] and there is no transfer request at a step [15] (False) -- it is -- the time -- a step [17], [18], and [19] -- each -- the value of an internal counter (req cnt) is judged. At the time of (req cnt=0), it is advanced to a step [20] from a step [17], and since the motors 51 and 52 of the revolution universal head 50 are driven, communication link data transfer processing of a location actuation demand is performed absolutely here.

[0041] At the time, it is advanced to a step [21] from a step [18], and since the motor 16 of the lens block section 11 is driven, communication link data transfer processing of a location actuation demand is absolutely performed for moreover (req cnt=1). At the time, it is advanced to a step [22] from a step [19], and creation processing of the panorama image mentioned later is performed for moreover (req cnt=2).

[0042] And after a step [20] and [21] are performed, processing which counts up (req cnt) at a step [23] is performed. Moreover, after a step [22] is performed,

processing which returns (req cnt) to 0 at a step [24] is performed. For every processing of each event, processing of these steps [20], [21], and [22] circulates, and is performed by this.

[0043] Creation processing of a further above-mentioned panorama image is performed by [ as stating below ]. That is, in the step [30] which shows creation processing of this panorama image to drawing 3 , processing of the step [22] odor lever of an above-mentioned timer event is performed by setting up a panorama creation demand (Flag pa).

[0044] Here explains the detail of creation processing of a panorama image using drawing 5 . In addition, in this example, the procedure of processing is performed according to an internal counter (Pano cnt).

[0045] Then, the value of an internal counter (Pano cnt) is first judged by the step [31] and [32]. At the time of (Pano cnt=1), it is advanced to a step [33] from a step [31], and while processing which drives the motor 16 of the lens block section 11 is performed so that the field angle of image pick-up equipment 10 may be set as the maximum wide angle, processing which counts up (Pano cnt) is performed here. In addition, a panorama image is formed by image acquisition of a smaller count by a field angle being set as the maximum wide angle.

[0046] Moreover, it is advanced to a step [34] from a step [32] at the time of (Pano cnt=2), and while processing which drives the motors 51 and 52 of the

revolution universal head 50 is performed so that the image pick-up range of image pick-up equipment 10 may be set as the location which performs image acquisition first by creation processing of a panorama image, processing which counts up (Pano cnt) is performed.

[0047] When it is further (Pano cnt) three or more, it is checked that it has been moved to the zoom location and image pick-up range which were set up by the step [35] and [36] an above-mentioned step [33] and [34]. And when it arrives at these setting-out locations, the first image acquisition is performed at a step [37]. Processing which furthermore drives the motors 51 and 52 of the revolution universal head 50 in the image acquisition location of a degree at a step [38] is performed.

[0048] Moreover, the horizontal of the image previously acquired at the step [39], compression processing to a perpendicular direction, etc. are performed, and the creation situation of a panorama image is expressed to the viewing area 62 of a monitor 60 as a step [40]. Processing which furthermore counts up (Pano cnt) at a step [41] is performed, it is judged whether the panorama image was completed at the step [42], and the above actuation is repeated when having not completed.

[0049] and -- if a panorama image is completed at a step [42] -- a step [43] -- a panorama creation demand (Flag pa) -- being nothing (Flag pa=False) -- while

being carried out, the panorama image completed at the step [44] is saved, and actuation is ended.

[0050] Thus, it is connected while compression processing of the image acquired while sequential migration of the image pick-up range of image pick-up equipment 10 was carried out, for example by the revolution universal head 50 is carried out, and a panorama image is formed. In addition, the revolution universal head 50 operates here so that it may advance from the always same direction to the target position where it is ordered. A gap of the connection image by the play (backlash of a gear etc.) of the device of the drive system which may be generated by this in the case of connection of an image can be amended.

[0051] And in this equipment, since the video signal of the origin connected by formation of an above-mentioned panorama image does not have the fixed image pick-up conditions, if it connects as it is, by the part, neither exposure nor a white balance can become irregular, and cannot obtain the uniform panorama image of image quality. Then, in the image processing system 33 of a computer apparatus 30, he performs an image processing, and is trying to obtain the uniform panorama image of image quality in above-mentioned equipment.

[0052] That is, drawing 6 shows an example of the image processing for it. In this drawing 6 , image pick-up conditions, such as each image pick-up time of day, and positional information lens control information, exposure control

information, white balance control information, image quality control information, are attached, and are memorized by each image pick-up signal which forms a panorama image.

[0053] Then, after extracting average brightness information, for example and carrying out weighting according to each image pick-up condition from each video signal connected as shown in A of drawing 6 , the amount of amendments of each pixel is determined as compared with the criteria brightness set up beforehand (B of drawing 6 ). Exposure as the whole panorama image is made into homogeneity by performing this amendment.

[0054] The integral of the (Red R) green (G) blue (B) of the pixel which furthermore has the brightness of after that, for example, more than fixed, is searched for, the amount of gaps from white is computed, and the white balance to each pixel is adjusted (C of drawing 6 ). By this, the uniform panorama image of image quality as shown in D of drawing 6 can be obtained.

[0055] Therefore, in this equipment, while forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle, the panorama image which does not produce sense of incongruity with an easy configuration to change of image pick-up time of day, image pick-up conditions, etc. can be obtained with high resolution by memorizing the image pick-up time

of day and/or the image pick-up conditions in that case.

[0056] According to this invention for a thing with problems, such as producing sense of incongruity by this, for example to change of image pick-up time of day or image pick-up conditions by the approach of there being a possibility that resolution may fall, even if it uses the lens of an expensive wide angle system with conventional equipment, and inserting in a preservation image, compounding, and forming a panorama image, these troubles are cancelable.

[0057] In further above-mentioned equipment, the created panorama image is displayed on the viewing area 62 of the panorama image of the above-mentioned computer screen 60. In this case, on a monitor 60, the manual operation button 63 as shown in drawing 7 is displayed with the above-mentioned viewing areas 61 and 62.

[0058] And if a user directs the pixel of the arbitration in a viewing area 62 with input means, such as a pointing device (mouse), on such a computer screen 60, the coordinate of the pixel to which the upper left corner of a viewing area 62 was directed as a zero, for example will be acquired, and the coordinate of the acquired directing point will be transmitted to a computer apparatus 30.

[0059] So, in a computer apparatus 30, the image pick-up field containing the pixel of a directing point is distinguished from the transmitted coordinate, and the coordinate of this image pick-up field and a migration instruction are transmitted

to the mode controller 42. Control is performed so that the image pick-up field of the target containing the pixel which analysis processing of the data received at the step [14] of an above-mentioned timer event was carried out, drove the revolution universal head 50 by the mode controller 42 according to this analyzed data, and was directed may be picturized by this.

[0060] That is, a user directs a location to observe in detail using input means, such as a pointing device (mouse), checking the panorama image for example, on a computer screen 60. By these directions, image pick-up equipment 10 is turned in the direction shown by the revolution universal head 50, and the current image of that location is displayed on the viewing area 61 of an image pick-up image.

[0061] And observing the image displayed on the viewing area 61 of this image pick-up image, if a user becomes an image to record, he can memorize a required image to the storage 32, such as a hard disk, by pushing the recorder run key of the manual operation button 63 on a monitor 60 with a pointing device (mouse) etc. (preservation).

[0062] In addition, this image saved may be the still picture of the flash when the user pushed the recorder run key, and can also save the animation of the desired die length by actuation of the manual operation button 63 of arbitration.

Or when there are no allowances in the capacity of storage 32, the intermittent

animation using a still picture may be saved. And the data of above-mentioned image pick-up time of day or image pick-up conditions are attached also in the case of storage (preservation) of these still pictures, an animation, and an intermittent animation, and are memorized at it.

[0063] Then, creation of the panorama image using the image memorized by doing still in this way (preservation) is performed as follows.

[0064] That is, in the display of the computer screen 60 as shown in above-mentioned drawing 7 , if a user directs the pixel of the arbitration in a viewing area 62 with input means, such as a pointing device (mouse), the coordinate of the pixel to which the upper left corner of a viewing area 62 was directed as a zero, for example will be acquired, and the coordinate of the acquired directing point will be transmitted to a computer apparatus 30.

[0065] Then, in a computer apparatus 30, the image pick-up field containing the pixel of a directing point is distinguished from the transmitted coordinate, and when the partial image including this image pick-up field is saved, while displaying on a panorama image by enclosing that field by the borderline which it was colored, for example etc., the image saved there is displayed. The preservation image of a desired field can be seen on a panorama image by this.

[0066] In this case, on a panorama image, since an image is compressed and displayed, it can also be expanded and displayed out of a viewing area 62 to see



in a detail. in that case, the display to the viewing area 61 of an image pick-up image -- an amplification complement can be carried out and it can also display on the whole screen of a monitor 60.

[0067] Moreover, when two or more images are saved to the same field to which the \*\*\*\* was directed, a desired image can be searched by actuation of the manual operation button 63 on a monitor 60. In this case, retrieval of an image can be performed by specifying image pick-up time of day, image pick-up conditions, etc. which were memorized with the above-mentioned video signal.

[0068] If the image of the specified field is simply displayed on a panorama image in piles when seeing a preservation image on a further above-mentioned panorama image, it will become an unnatural image when a difference is in the photography condition. So, in such a case, the uniform panorama image of image quality can be obtained by performing same processing with having been shown in above-mentioned drawing 6 .

[0069] Therefore, in this equipment, also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0070] According to this invention for a thing with problems, such as producing sense of incongruity, for example to change of image pick-up time of day or image pick-up conditions, by the approach of inserting in and compounding the video signal of the subregion which there is a possibility that resolution may fall even if it uses the lens of an expensive wide angle system with conventional equipment, and was directed by this, for example, and forming a panorama image, these troubles are cancelable.

[0071] In addition, in above-mentioned equipment, although setting out of the panorama creation demand (Flag pa) in the step [30] of above-mentioned drawing 3 can operate the carbon button shown on a monitor 60 or a user can also perform it by the so-called remote control, setting out can be further performed automatically by setting out by assignment of photography time of day, detection of image recognition (processing) and various kinds of sensors, etc.

[0072] That is, when performing setting out by assignment of photography time of day, for example, the time of day is saved at storage 32 by setting up the time of day which performs a panoramic exposure with the input units 35, such as pointing devices, such as a keyboard attached to the computer apparatus 30 of drawing 1 , and the so-called mouse.

[0073] And the clock (not shown) built in the computer apparatus 30 is compared

with the saved setting-out time of day, for example in the step [3] of an event judging of drawing 2 , when both are in agreement, it is ordered in the creation demand of a panorama image, and photography is performed. In addition, time of day can also perform a seriography automatically by setting up plurality and directing a fixed time interval.

[0074] Or the present and the past compare the image information acquired from image pick-up equipment 10, the difference is detected, and it can be automatically ordered in the creation demand of a panorama image. The image information acquired here is the brightness of an image, the color difference, a profile, a color-balance, etc.

[0075] By the approach of using brightness information there, the brightness average of the part of an image by which current projecting is carried out from image pick-up equipment 10 is compared with the brightness average of some panorama images which are photoed and are saved at storage 32. And when the difference widens more than fixed, it is ordered in the creation demand of a panorama image, and photography is performed. And monitor 60 grade projects the created panorama image promptly.

[0076] In addition, by this approach, in photography of scenery etc., since renewal of photography of the panorama image is automatically carried out when surrounding brightness is changing with time amount progress, it becomes

possible to offer the panorama image near the image always picturized with current image pick-up equipment 10.

[0077] Moreover, as shown, for example in drawing 8 , a representation point is specified about the photographic subject currently picturized with image pick-up equipment 10, a model is made combining the brightness and color difference information, and it saves with the positional information at storage 32. And when the same range is always picturized with image pick-up equipment 10 and a difference arises in the position coordinate of a photographic subject model, the creation demand of a panorama image is able to take a photograph by being ordered.

[0078] That is, in A of drawing 8 , as shown in B of drawing 8 , when the position coordinate (X0, Y0) of the original photographic subject model turns into a position coordinate (X1, Y1),  $X0 \neq X1$  or  $Y0 \neq Y1$  can be judged, as shown in C of drawing 8 , it can be recognized as the photographic subject having moved, and it can be ordered the creation demand of a panorama image, and photography can be started. By this approach, above-mentioned equipment can be used as moving state monitoring system.

[0079] In addition, it is also possible to have a means by which speech information like a microphone can be obtained, to order it the creation demand of a panorama image with audio detection, and to start photography. In this case,

as shown, for example in drawing 9 , image pick-up equipment 10 is moved by the driving means of revolution universal-head 50 grade, and two or more directional microphones are installed in the range which can be picturized. The speech information collected by these directional microphones is inputted into the computer apparatus 30 of drawing 1 .

[0080] And in this computer apparatus 30, if specific speech information is detected in the speech information collected with the microphone, while ordering it the creation demand of a panorama image, it memorizes which direction the directivity of the microphone which detected that speech information is, and if required, photography can be performed from that direction and a panorama image can be updated.

[0081] Thus, by detection of specific speech information, change of a photographic subject can be recognized, it can be ordered the creation demand of a panorama image, and photography can be started. Moreover, by this approach, detection if needed and renewal of a panorama image can be similarly performed using various sensors, such as a photosensor and a pyroelectric sensor, respectively.

[0082] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a recording device by having formed the storage 32 as a record means. In addition, with storage 32, the image pick-up time of day and

the image pick-up conditions in the case of that image pick-up are recorded with the video signal from image pick-up equipment 10 in this case.

[0083] Therefore, in this equipment, by changing the image pick-up range of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be recorded with high resolution.

[0084] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a processor by having formed the image processing system 33 as a processing means of a video signal. In addition, in this case, with an image processing system 33, while connecting the video signal from image pick-up equipment 10 and forming a panorama image, the video signal connected to change of image pick-up time of day, image pick-up conditions, etc. is amended.

[0085] Therefore, in this equipment, by changing the image pick-up range of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means, it is an easy configuration and the

panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be formed with high resolution.

[0086] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a display by having formed the computer screen 60 as a display means.

[0087] Therefore, in this equipment, while forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle, by displaying this video signal on a display means, it is an easy configuration and view \*\* of the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be carried out with high resolution.

[0088] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a regenerative apparatus by having formed the storage 32 as a playback means. In addition, with storage 32, the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from image pick-up equipment 10 are recorded and reproduced in this case.

[0089] Therefore, in this equipment, by forming the video signal which

reproduces the image pick-up time of day and the image pick-up conditions at the time of being the video signal with which sequential change of the image pick-up range was carried out, and its image pick-up, compounds this playback video signal, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be reproduced with high resolution.

[0090] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as transmission equipment by sending out the signal sent to a computer screen 60 from a computer apparatus 30 to a computer network like the Internet through a modem (not shown).

[0091] That is, in such a computer network, it accesses through a network to the configuration of the image pick-up equipment 10 installed in the remote place a computer apparatus 30 - the revolution universal head 50 from the computer apparatus of arbitration, an indicating equipment, and the equipment by the side of the user who has a modem. By this, the image pick-up image at that time and the panorama image saved at the storage 32 of a computer apparatus 30 can be obtained to the display by the side of a user with the same screen configuration as the monitor 60 of drawing 1 .

[0092] Therefore, in this equipment, by forming the video signal which



compounds the video signal picturized with the image pick-up means installed in the remote place, and has a large field angle, it is an easy configuration and view \*\* of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be carried out with high resolution.

[0093] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a record medium by considering as what can detach and attach the record medium of storage 32 freely, and taking out this record medium.

[0094] Therefore, in this equipment, the panorama image which is an easy configuration and does not produce sense of incongruity by reproducing and connecting this record medium to change of image pick-up time of day, image pick-up conditions, etc. can be obtained with high resolution by changing the image pick-up range of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means.

[0095] Moreover, in these equipments, also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal, the panorama image which does not produce sense of incongruity to change of image pick-up time of day,

image pick-up conditions, etc. can be obtained.

[0096] In further above-mentioned equipment, in case information, such as image pick-up time of day in the case of an image pick-up and/or image pick-up conditions, is memorized with the picturized video signal, as shown in A of drawing 10 , such information is added and saved at the head of the usual image format. Or as shown in B of this drawing, apart from the file of each image, only information, such as image pick-up time of day and/or image pick-up conditions, can be memorized collectively, and the approach of matching with each image file can be used.

[0097] In addition, in above-mentioned equipment, although one set of image pick-up equipment 10 changes the image pick-up range with the revolution universal head 50, for example and a panorama image is picturized, this is not restricted to such a means. That is, a panorama image can be created based on [ based on a series of images picturized, for example, using a digital still picture camera as a means which picturizes such a panorama image ] the dynamic image picturized with the video camera.

[0098] Moreover, two or more image pick-up equipments can be arranged towards each direction which forms a panorama image instead of using the revolution universal head 50, the video signal from these image pick-up equipments can be switched one by one, and the video signal same also as a

driving means can be acquired.

[0099] In further above-mentioned equipment, the video signal picturized using memorized information, such as image pick-up time of day and image pick-up conditions, can be searched promptly and easily. By this, also when searching a desired image by actuation of the manual operation button 63 on the above-mentioned monitor 60, it can search very smoothly.

[0100]

[Effect of the Invention] While forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle according to invention of claim 1, the panorama image which does not produce sense of incongruity with an easy configuration to change of image pick-up time of day, image pick-up conditions, etc. could be obtained with high resolution by memorizing the image pick-up time of day and/or the image pick-up conditions in that case.

[0101] According to this invention for a thing with problems, such as producing sense of incongruity by this, for example to change of image pick-up time of day or image pick-up conditions by the approach of there being a possibility that resolution may fall, even if it uses the lens of an expensive wide angle system with conventional equipment, and inserting in a preservation image, compounding, and forming a panorama image, these troubles are cancelable.

[0102] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 2-5, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0103] According to invention of claim 6, by changing the image pick-up range of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be recorded with high resolution.

[0104] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 7-10, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0105] According to invention of claim 11, by changing the image pick-up range

of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be formed with high resolution.

[0106] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 12-15, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0107] While forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle according to invention of claim 16, by displaying this video signal on a display means, it is an easy configuration and view \*\* of the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be carried out with high resolution.

[0108] Also when some panorama images are changed by amending the video

signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 17-20, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0109] By forming the video signal which reproduces the image pick-up time of day and the image pick-up conditions at the time of being the video signal with which sequential change of the image pick-up range was carried out, and its image pick-up according to invention of claim 21, compounds this playback video signal, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be reproduced with high resolution.

[0110] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 22-25, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0111] According to invention of claim 26, by forming the video signal which

compounds the video signal picturized with the image pick-up means installed in the remote place, and has a large field angle, it is an easy configuration and view \*\* of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be carried out with high resolution.

[0112] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video signal according to invention of claims 27-30, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0113] According to invention of claim 31, the panorama image which is an easy configuration and does not produce sense of incongruity by reproducing and connecting this record medium to change of image pick-up time of day, image pick-up conditions, etc. can be obtained with high resolution by changing the image pick-up range of an image pick-up means, and recording the video signal, and the image pick-up time of day and the image pick-up conditions in the case of an image pick-up from such an image pick-up means.

[0114] Also when some panorama images are changed by amending the video signal of other subregions according to the image pick-up conditions of the video signal of the subregion directed on a display means to display the formed video

signal according to invention of claims 32-35, the panorama image which does not produce sense of incongruity to change of image pick-up time of day, image pick-up conditions, etc. can be obtained.

[0115] Furthermore, according to this invention, the video signal picturized using memorized information, such as image pick-up time of day and image pick-up conditions, can be searched promptly and easily.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of an image pick-up and the whole system of an example of a display with which this invention is applied.

[Drawing 2] It is flow chart drawing for explanation of the actuation.

[Drawing 3] It is flow chart drawing for explanation of the actuation.

[Drawing 4] It is flow chart drawing for explanation of the actuation.

[Drawing 5] It is flow chart drawing for explanation of the actuation.

[Drawing 6] It is drawing for the explanation.

[Drawing 7] It is drawing for the explanation.

[Drawing 8] It is drawing for the explanation.



[Drawing 9] It is drawing for the explanation.

[Drawing 10] It is drawing for the explanation.

[Description of Notations]

10 Image Pick-up Equipment, 11 Lens Block Section, 12 CCD, 13 Signal Separation / Automatic-Gain-Control Equipment, 14 A/D-conversion equipment, 15 A signal processor, 16 The stepping motor for zoom, 20 A television monitor, 30 A computer, 31 video capture boards, 32 Storage, 33 An image processing system, 34 A control unit, 35 Input unit, 41 A camera controller, 42 A mode controller, 43 Punch Ruta controller, 50 A revolution universal head, 51 The stepping motor for pans, 52 The stepping motor for tilts, 60 A computer screen, 61 The viewing area of an image pick-up image, 62 Viewing area of a panorama image